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DEFENSE SYSTEMS MANAGEMENT COLLEGE

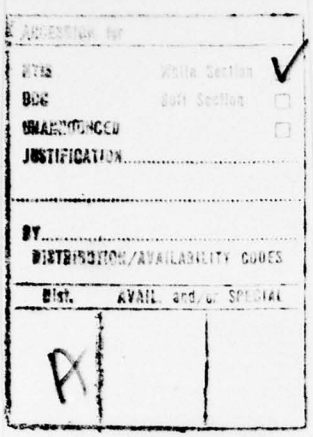
PROGRAM MANAGEMENT COURSE
INDIVIDUAL STUDY PROGRAM

DEFENSE MATERIEL ACQUISITION - OSHA'S IMPACT

STUDY PROJECT REPORT
PMC 77-1

J. W. Allen, Jr.
GS-13 DAC

FORT BELVOIR, VIRGINIA 22060



DEFENSE MATERIEL ACQUISITION - OSHA'S IMPACT

Individual Study Program

Study Project Report

Prepared as a Formal Report

Defense Systems Management College

Program Management Course

Class 77-1

by

J. W. Allen, Jr.
GS-13 DAC

May 1977

Study Project Advisor
Mr. Wayne Schmidt

This study project report represents the views, conclusions, and recommendations of the author and does not necessarily reflect the official opinion of the Defense Systems Management College or the Department of Defense.

SECURITY CLASSIFICATION OF THIS PAGE *(When Data Entered)*

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE *(and Subtitle)* DEFENSE MATERIEL ACQUISITION - OSHA'S IMPACT		5. TYPE OF REPORT & PERIOD COVERED Study Project Report 77-1 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) J. W. ALLEN, JR.,		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS DEFENSE SYSTEMS MANAGEMENT COLLEGE FT. BELVOIR, VA 22060		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS DEFENSE SYSTEMS MANAGEMENT COLLEGE FT. BELVOIR VA 22060		12. REPORT DATE 77-1 13. NUMBER OF PAGES 27
14. MONITORING AGENCY NAME & ADDRESS*(if different from Controlling Office)*		15. SECURITY CLASS. *(of this report)* UNCLASSIFIED 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT *(of this Report)*

UNLIMITED

DISTRIBUTION STATEMENT A
Approved for public release;
Distribution Unlimited

17. DISTRIBUTION STATEMENT *(of the abstract entered in Block 20, if different from Report)*

18. SUPPLEMENTARY NOTES

19. KEY WORDS *(Continue on reverse side if necessary and identify by block number)*

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20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

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SECURITY CLASSIFICATION OF THIS PAGE *(When Data Entered)*

DEFENSE SYSTEMS MANAGEMENT COLLEGE

STUDY TITLE: DEFENSE MATERIEL ACQUISITION - OSHA'S IMPACT

STUDY PROJECT GOALS:

To review the 1970 Occupational Safety and Health Act, the functions of the Occupational Safety and Health Administration and to illustrate its impact on the acquisition of defense materiel.

STUDY REPORT ABSTRACT:

This report examines the 1970 Occupational Safety and Health Act, the general workplace safety requirements stipulated in the Act and the agencies created to enforce the requirements. The report discusses the organization of the Occupational Safety and Health Agency, OSHA, and how it functions. The issuance of emergency standards on certain carcinogens, cancer-causing chemicals, and the impact on the STINGER Air Defense System rocket motor development program are used to illustrate OSHA's effect on defense materiel acquisition. Industry's reaction to OSHA and Congressional action to modify the 1970 Act are examined. The report can serve as a point of departure for future research on the Occupational Safety and Health Administration by DSMC students.

KEY WORDS: OSHA
Carcinogens

NAME, RANK, SERVICE	CLASS	DATE
J. W. Allen, Jr., GS-13, Army	PMC 77-1	May 1977

EXECUTIVE SUMMARY

The enactment of the 1970 Occupation Safety and Health Act created the Occupation Safety and Health Administration, OSHA, within the Department of Labor and charged it with maintaining safe and healthful working conditions in the American workplace. The subsequent regulations and standards issued by OSHA have had a significant impact on the acquisition of defense materiel.

This report examines the general workplace safety requirements stipulated in the 1970 Act and the agencies created to enforce these requirements. The organization and functioning of OSHA is reviewed. A major function of OSHA is the issuance of emergency standards governing the handling of hazardous or toxic materials. One such emergency standard concerning carcinogenic, cancer-causing materials caused a significant cost and schedule impact to the STINGER Air Defense System rocket motor development program. The emergency standard placed severe handling restrictions on a certain material, making its use uneconomical. The subsequent redesign effort to select a substitute material caused extensive schedule slippage and cost growth. It is concluded that defense contractors have become more sensitive to the actions of OSHA and are closely monitoring its activity. Further, OSHA will continue to have an impact on the defense industries. Congress is considering legislation to amend the 1970 Act to require OSHA to consider the economic impact of standards prior to making them permanent.

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SECTION I

INTRODUCTION

Environmental awareness and the concomitant concern with safety in the workplace are having a pronounced effect on the acquisition of defense materiel. A barrage of new and restrictive standards are descending on the industries upon which the Department of Defense depends for its weapon systems and components as newly created regulatory agencies exercise their authority. One such agency is the Occupational Safety and Health Administration, better known as OSHA.

Congress passed the Williams and Steiger Occupational Safety and Health Act in 1970 (8:1).[1] Was such legislation needed? Statistics show that between 1969 and 1973 more persons were killed at work than in the Viet Nam War (1:21). Further, persons are disabled on the job each year, resulting in a loss of 240 million man days (2). It has been estimated by the National Safety Council that the cost of wage losses, insurance costs, medical expenses and related costs such as time spent investigating and reporting accidents exceeds $3.9 billion annually (3:32). The employers' cost is more than $4.8 billion annually (4:1). The new cases of occupational diseases were estimated in 1970 to be 300,000 (8:1). These figures make it clear that from both a humane and economic viewpoint, legislation for added safety in the workplace was needed.

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[1]This notation will be used throughout the report for major references. The first number is the source in the bibliography. If the source is a page-numbered document, the second number is the page number.

PURPOSE AND SCOPE OF THE STUDY REPORT

The overall mission of the Occupational Safety and Health Administration, OSHA, will be examined with particular emphasis on certain standards created for the handling of hazardous materials. The impacts of these standards on the STINGER Air Defense System development program will be used to illustrate how OSHA can affect the materiel acquisition cycle. The primary goal of this report is to surface the far-reaching effects OSHA is having on employers and to relate this to the acquisition of defense materiel.

ORGANIZATION OF THE REPORT

Section II of this report will examine the origin of the Occupational Safety and Health Administration and give an overview of its mission. Section III will examine the scope of OSHA's operation, how it functions, a brief look at employer responsibilities and employee rights. Section IV will relay the program impacts experienced by the STINGER Air Defense Weapon System resulting from OSHA standards on carcinogeneous materials. Section V will contain conclusions and implications. A Bibliography provides data on sources for any future investigations.

LIMITATIONS OF THE REPORT

This report is limited to an overview of OSHA, an examination of a specific OSHA standard concerning the handling of cancer-producing chemicals, carcinogens, and the effect on the defense industry.

SECTION II

BACKGROUND

When Congress enacted the Williams-Steiger Occupational Safety and Health Act of 1970, their purpose was "to assure so far as possible every working man and woman in the Nation safe and healthful working conditions and to preserve our human resources." (8:1). The provisions of the Act created the Occupational Safety and Health Administration within the Department of Labor. Its major purposes are to (1) encourage employers and employees to reduce hazards in the workplace and to implement new or improve existing safety and health programs, (2) establish "separate but dependent responsibilities and rights" for employers and employees for the achievement of better safety and health conditions, (3) establish reporting and record-keeping procedures to monitor job-related injuries and illnesses, (4) develop mandatory job safety and health standards and enforce them effectively, and (5) encourage the States to assume the fullest responsibility for establishing and administering their own occupational safety and health programs, which must be "at least as effective as" the federal program (8:2).

The Act created two other federal agencies in addition to the Occupational Safety and Health Administration: the National Institute of Occupational Safety and Health in the Department of Health, Education and Welfare; and the Occupational Safety and Health Review Commission, an independent agency of the Executive Branch (1:22).

The National Institute for Occupational Safety and Health (NIOSH) conducts research on various safety and health problems, provides technical assistance to OSHA, and recommends standards for OSHA's adoption. A particularly critical mission is NIOSH's investigation of toxic substances and its development of criteria for the use of such substances in the workplace (8:6). The Occupational Safety and Health Review Commission settles enforcement actions of the Department of Labor when they are contested by employers, employees or unions (1:22).

The Act covers all employers whose business affects interstate commerce (1:21). This assures that all defense contractors and their subcontractors are affected by the actions of OSHA.

SECTION III

HOW OSHA FUNCTIONS

OSHA has the authority to develop standards, conduct inspections to determine compliance with the standards and initiate enforcement actions against companies that are not in compliance. There are four kinds of standards that are set. They are (1) interim standards based on already existing federal guidelines, (2) consensus standards which are developed after obtaining the views of interested parties and which are typically those established by various trade associations, (3) permanent standards that would replace or supplement interim standards if the interim standards are determined not to be in the best interest of employees' safety, and (4) temporary emergency standards, which are issued quickly when a finding suggests that employees are exposed to a serious hazard (1:22). There are two basic types of standards: horizontal regulations, which apply to all industries and relate to such features as fire extinguishers, electrical groundings and machine guards; and vertical provisions, which apply to particular industries such as the chemical industry (1:23).

When OSHA intends to propose, amend or delete a standard, it publishes these intentions in the Federal Register as a "Notice of Proposed Rulemaking" or as an earlier "Advance Notice of Proposed Rulemaking" (8:6). There is an intricate procedure whereby interested parties may submit arguments and evidence for or against the proposed action and may request a public hearing. Notices of such public hearings and the subsequent OSHA rulings are also published in the Federal Register (8:6).

OSHA enforces its standards by an inspection procedure. Because of the large number of businesses involved, five priorities for inspection have been established. The first priority is situations that pose an immediate danger to workers. The second priority is where a fatality has occurred. The third priority is an inspection based upon a valid employee complaint. The fourth priority is specific high-hazard industries, occupations or health substances. The fifth category is the general inspection of all industries (1:22). Inspections are generally conducted without advance notice. There are special cases where advance notice is given, but such notice is less than 24 hours. Alerting an employer in advance of an OSHA inspection can result in a fine of up to $1,000 or a six-month jail term (8:14).

There are ten OSHA regional offices, each responsible for between four and eight states. Region I covers the northeastern states of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont; Region II takes in New York, New Jersey, Puerto Rico, the Virgin Islands and the Canal Zone, Panama; Delaware, the District of Columbia, Maryland, Pennsylvania and both Virginias are grouped in Region III; Region IV encompasses the southern states of Alabama, Florida, Georgia, Kentucky, Mississippi, North and South Carolina and Tennessee; Region V is made up of Illinois, Indiana, Michigan, Minnesota, Ohio and Wisconsin; Region VI is comprised of Arkansas, Louisiana, New Mexico, Oklahoma and Texas; Iowa, Kansas, Missouri and Nebraska make up Region VII; Region VIII is made up of the western states of Colorado, Montana, North and South Dakota, Utah and Wyoming; Region IX covers California, Arizona, Nevada and Hawaii; Region X is comprised of Alaska, Idaho, Oregon and Washington.

Within each region are area directors. The number of area directors varies between five and fifteen, depending on the size of the region and its industrial density (9).

The general employer requirements under the Occupational Safety and Health Act are to maintain a hazard-free workplace, assure that employees have safe tools and equipment, report accidents involving a fatality or hospitalization of a number of employees and maintain certain records on work-related injuries and illnesses. There are multitudinous lesser requirements concerning such things as the use and posting of hazard warnings, keeping employees informed about OSHA, cooperation with OSHA inspection officials and the posting of citations for apparent violations of standards at or near the workplace (8:28). It has been stated "Congress has required the employer to be responsible for every unsafe working condition. For example, the employee can perform an unsafe act against the direct order of the employer, and the employer will be liable under workman's compensation laws in some states, as well as under OSHA... An employee deliberately could create an unsafe or hazardous condition, report it, and the employer specifically is barred from discriminating against the employee under the act." (5:63). It is clear therefore that no incentive exists for the employees to follow OSHA standards except for their own innate safety (1:23).

Employees also have certain rights specified in the Act. Among the most important are the right to request information from the employer on health hazards that may exist in the workplace and what is done to deal with them; the right to request an inspection from an OSHA area director

if a hazardous condition is suspected (requestor's name will be withheld from the employer); the right to have an authorized employee representative accompany the OSHA official on the inspection and be made aware of action taken as a result of the inspection; and the right to have access to all data taken by the company on hazardous materials. Further, the employee may file a complaint to OSHA if he is discriminated against, discharged or demoted as a result of exercising their rights under the Act (8:31).

Penalties proposed by OSHA for violations range from a $1,000 fine for non-serious violations to a maximum of $10,000 or six months in jail for willful and repeated serious violations. Conviction of an employer for a willful violation that has resulted in the death of an employee is punishable by the maximum fine. A second conviction doubles the maximum penalties (8:23). The Occupational Safety and Health Administration "proposes" penalties. The Occupational Safety and Health Review Commission has the authority for assessing the penalties. The commission assigns the hearing of such cases to an administrative law judge, typically in or near the community where the alleged violation has occurred (1:22). The ruling of the judge is final after 30 days unless reviewed by the commission (1:22). The employer, if he so desires, can further appeal the ruling in the courts.

SECTION IV

DISCUSSION OF STINGER PROGRAM IMPACTS

General

The STINGER missile system is a member of the family of Short Range Air Defense (SHORAD) weapons protecting the Field Army units. The shoulder-fired weapon will normally be employed to provide low-altitude air defense for battalions, squadrons, and company-size units operating near the forward edge of the battle area. The missile round is a guided missile sealed in a launch tube assembly. The missile remains in the tube until it is fired. Launch capability is provided by attachment of a separable gripstock assembly to the launch tube assembly containing the missile (11).

The 2.75 inch diameter, five foot long missile is made up of four sections; a passive infrared guidance section, a blast-type warhead section, and two solid propellant rocket motors. The launch motor ejects the missile from the launch tube and then separates from the missile. The missile coasts for approximately 25 feet before the flight motor is ignited. The flight motor propels the missile to the target (11).

The STINGER weapon is being developed by the U. S. Army Missile Command under contract to General Dynamics Corporation-Pomona Division, Pomona, California. Full-scale engineering development was initiated in June 1972. Development of both rocket motors was subcontracted to Atlantic Research Corporation-Propulsion Division, Gainesville, Virginia.

This 30-month effort included the design and environmental qualification testing of both motors and limited manufacturing of motors to support system level tests.

The initial motor development activity proceeded smoothly, with designs for both motors established by February 1973. Flightweight motors were fabricated and preliminary environmental testing was started. The motor configurations at this point in time were generally as described in the following paragraphs.

DESCRIPTION OF STINGER PROPULSION SYSTEM

Propulsion System

The STINGER propulsion system is shown in Figure 1. The forward end of the launch motor and the nozzle end of the flight motor are connected by pins. These pins are sheared by the action of a separation piston which is extended by launch motor combustion gases. The piston also imparts a retardation force to the launch motor as it separates from the flight motor. This slows the launch motor and positions it out of the flight motor exhaust plume when it is ignited (11).

Launch Motor

The launch motor, shown in Figure 2, is 2.75 inches in diameter, 3.9 inches long, and weighs approximately 1.5 pounds. The motor's primary components are a maraging steel case and forward closure, titanium piston assembly, igniter assembly, and 54 tubular grains of extruded solid propellant that are bonded to the forward closure with a

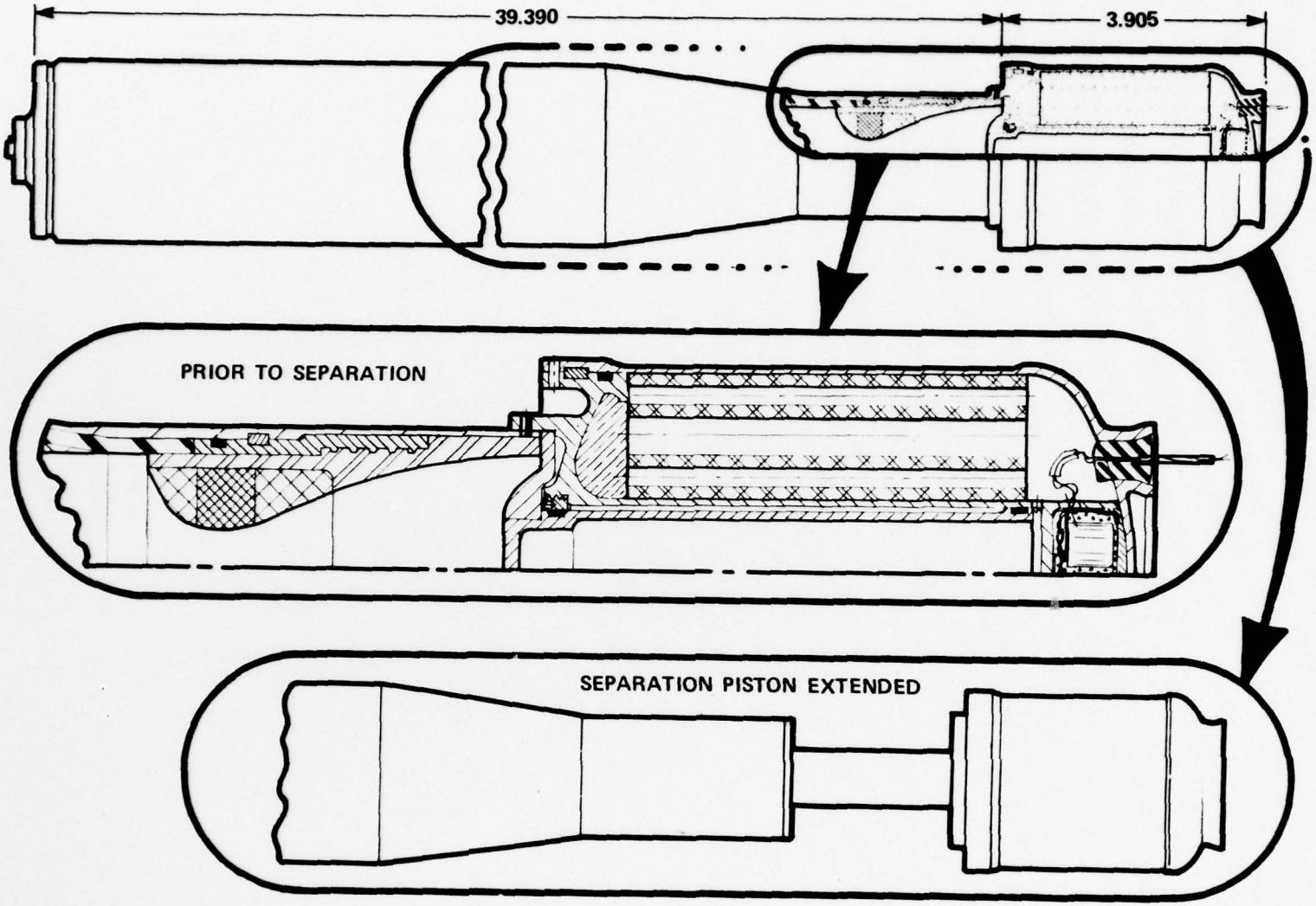

Figure 1. STINGER Propulsion System.

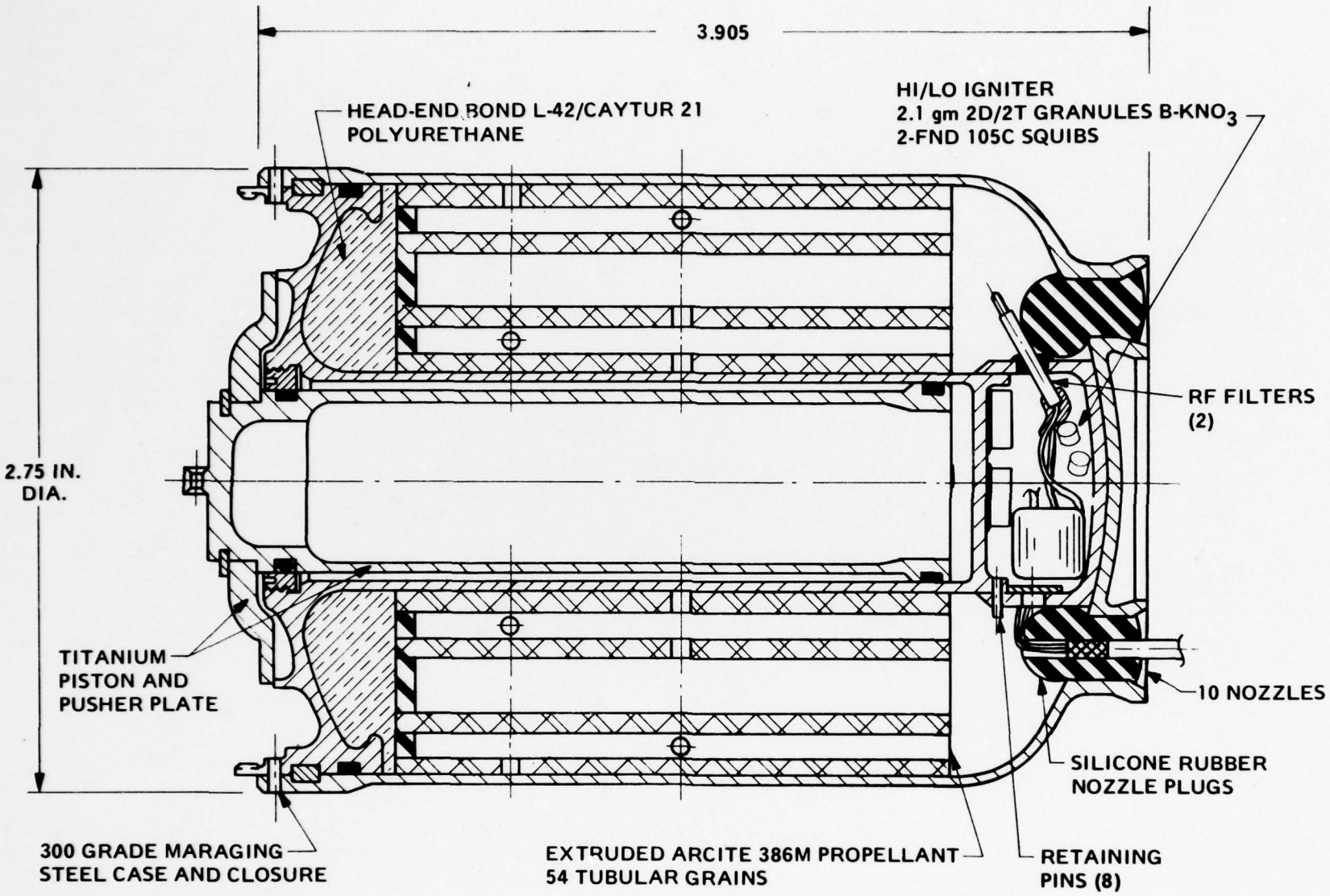

Figure 2. STINGER Launch Motor.

polyurethane potting material. The nozzle end of the motor case contains ten exhaust nozzles which are canted to produce torque and forward thrust. The nozzles are sealed with silicone rubber plugs. The launch motor burns completely within the STINGER launch tube and imparts the initial velocity and spin to the missile (11).

Flight Motor

The flight motor, shown in Figure 3, is 2.75 inches in diameter, 39.4 inches long and weighs approximately 15 pounds. The primary components are a maraging steel motor case insulated with an asbestos-phenolic liner, a steel forward closure, a cloverleaf design boost grain, a cartridge-loaded sustain grain, an igniter assembly and a nozzle assembly. The solid propellant boost grain is cast into the motor case and bonded to the case wall. The sustain grain is an end-burning design containing three axial silver wires to enhance burning rate and is inhibited with a reinforced rubber boot. Both the booster and sustainer grains burn during the boost phase to produce an initial period of high thrust, accelerating the missile to its peak velocity. After the boost grain is consumed, the sustain grain continues to burn at a lower thrust level to sustain the missile velocity for the balance of the flight. A safety interlock is connected electrically to the flight motor ignition circuit and mechanically to the launch motor. Flight motor ignition is thus precluded until the launch motor has separated, pulled the interconnecting lanyard and opened a shorting loop which runs from the flight motor igniter to the nozzle just forward of the launch motor. Ignition of the flight motor is

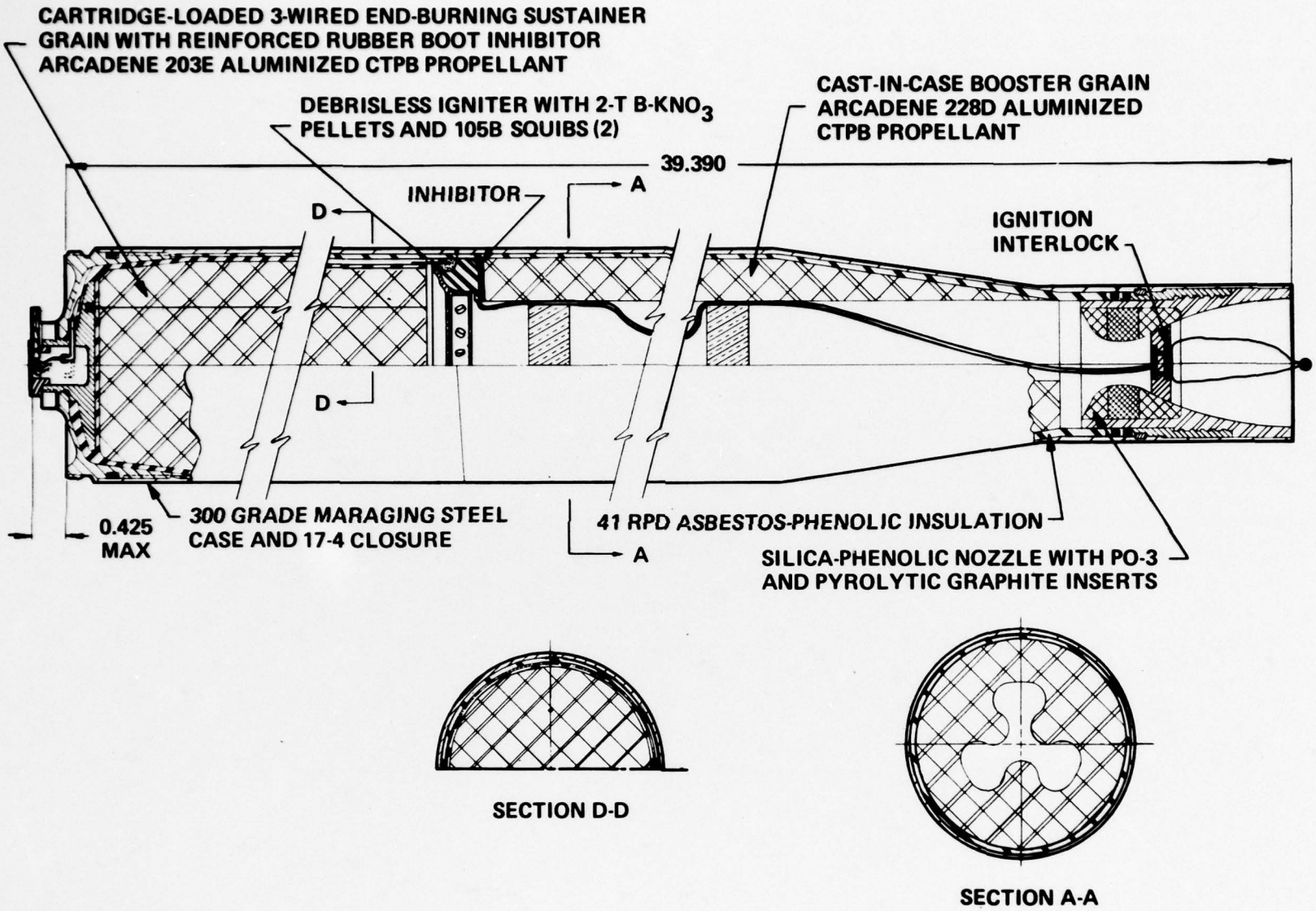

Figure 3. STINGER Flight Motor.

delayed approximately 0.25 second after launch to protect the gunner from exhaust gases (11).

CARCINOGENS

In May 1973 OSHA invoked stringent emergency standards for the handling of 14 chemicals regarded as cancer-causing, or carcinogenic (6:68Y). The standards were OSHA's first for minimizing the exposure of workers to cancer-causing chemicals and caused a strong reaction from the chemical industry. The major criticism of the emergency standard was that it established a "work practices standard" rather than specifying maximum exposure levels, as had been done earlier with cotton dust and asbestos. The work practice approach prescribes procedures and equipment to be used in handling the materials. The procedures and equipment were required without regard to distinctions between the various chemicals or between the physical layouts or processes of different plants. Further, a company that used as little as a barrel or two in a year was under the same restrictions as a plant in which the substance played a major role (6:68Y).

Four of the 14 chemicals were "surprise" inclusions with no advance warning given to the industry. One of the four was the chemical 4,4'-methylene(bis)-2-chloroaniline, better known as MOCA (6:68Y). MOCA was used as the curing agent in polyurethane rubber compounds.

STINGER'S USE OF MOCA

The polyurethane rubber curing agent, MOCA, was being utilized in both of the STINGER rocket motors. The potting material to which the

launch motor grains were bonded was a MOCA cured polyurethane, as was the adhesive used to bond the flight motor sustain grain inhibitor boot. The OSHA emergency standards for the handling of MOCA cured material required the use of controlled, hygienic processing facilities, and the use of disposable, inflatable suits by processing personnel. In June 1973, Atlantic Research Corporation, General Dynamics Corporation and the U. S. Army Missile Command Project Office formulated a plan of action regarding the MOCA adhesive. The plan called for a two-pronged approach. One, it was realized that the new requirements would make the economical processing of rocket motors impractical; therefore, a program was initiated to select substitute materials for both motors. Second, to prevent an impact to the system flight test schedule, a small hygienic facility would be set up to fabricate a limited number of motors (10).

THE MOUSE HOUSE

The temporary facility was constructed consisting of a mobile house trailer modified to provide positive pressure air flow throughout, a room for removal of protective clothing and showering and a workroom containing a vented work bench and vented oven for curing the booted propellant grains. All out-flowing air was passed through a filtering system, or scrubber. Normally, the uncured rubber was applied by hand to the sustain grain and the coated grain inserted in the inhibitor boot by a special machine. The booted grain was then cured in an oven. The hazardous conditions were the application of the uncured rubber and the curing cycle. These operations were performed by personnel in pressurized, disposable

suits. The facility was affectionately dubbed the "mouse house", since MOCA's hazardous nature was uncovered from tests conducted on mice. A total of approximately twelve flight motor sustainer grains were fabricated in this facility (10).

SELECTION OF SUBSTITUTE MATERIALS

The selection of substitute materials for the MOCA cured rubber consisted of a three-phase program. Phase I involved the screening of candidate materials. Phase II required the selection of prime candidates, the conduct of physical property tests and fabrication and static firing of several motors. Phase III involved selection of the final material(s), fabricating motors with the selected adhesive, conducting a limited environmental test program and then static firing the motors for final verification. Successful completion of these phases would permit reinitiation of the main-stream development effort (10).

Effort to select a substitute material for the flight motor proceeded with a minimum of difficulty and within several months the effort was complete and motor qualification proceeded. The launch motor effort was not so fortunate. The initial polyurethane material selected was used for both the potting layer and bonding the grains to the potting layer. Previously a rigid epoxy had been used to bond the grains. The hope was that an earlier problem of grain ejection (loss of grains during motor operation) would be eliminated with the more flexible grain bonding system. Subsequent motor tests showed substantial grain ejection and unacceptable performance. These difficulties were diagnosed as cure interference between the grains and the bonding material and were compensated

for by preinhibiting (epoxy coating) the ends of the grains. Further testing revealed unacceptable levels of grain ejection. Investigation showed that the selected polyurethane's cure process was erratic and that a new phenomenon (shock from the ignition process) was affecting grain ejection. The igniter design was modified and a new polyurethane material selected. This design proceeded successfully through the verification and qualification tests. The corrective action had consumed ten months and required hundreds of motor firings (10).

SECONDARY EFFECTS

Following completion of the motor qualification tests in October 1974, an accelerated aging program was initiated. Again, the flight motor proceeded through the high temperature storage test without difficulty. Aging tests of the now-qualified launch motor resulted in an overpressure failure of one of two motors stored for one month at 160°F. Investigation revealed that accelerated aging produced plasticizer migration from the propellant grains into the all-polyurethane bonding system. This phenomenon reduced the propellant flexibility and altered its burning characteristics such that the failure was induced. Laboratory and engineering analysis followed by additional motor tests confirmed that equilibrating the plasticizer levels in the polyurethane bonding and potting layers with that of the propellant eliminated the migration problem. Motors were fabricated and a second five-month aging test was started. This test series was completely successful until the fifth month when another overpressure failure was experienced. Failure analysis showed that the polyurethane material had lost its physical properties to such an extent

that it had a "cheesy" appearance. The original analysis concluded that the cadmium plating on the motor case and forward closure was "poisoning" the bonding material, leading to its degradation. A laboratory specimen test was conducted to select a coating that would be compatible with the bonding system. After several months of aging, it became evident that the polyurethane material was degrading due to contact with the propellant rather than the metallic coating. The test was stopped and an intense effort was launched to determine the degradation mechanism and arrive at a solution. After months of extensive laboratory analysis and screening tests, an additive to the polyurethane was selected that virtually eliminated the degradation. Motors were fabricated with the modified grain bonding system and a mini-qualification test was successfully conducted. The third aging test was completed with total success in October 1976.

COST AND SCHEDULE IMPACTS

When the OSHA ruling came in May 1973 the STINGER program was in the early phases of its flight testing. Subsystem evaluation flight tests had started in March 1973 and continued until November 1973, when the first guided flight was conducted. These early tests were few in number and widely spaced so that the delivery requirements for motors were minimal. Motors delivered prior to May 1973 and from the "mouse house" provided a sufficient stockpile for system level testing to continue unaffected. The major impacts were on the cost and schedule of the motor program. The overall result was that flight motor qualification was delayed three months. Launch motor qualification completion was delayed seven months.

The original thirty-month development program was extended to fifty-one months when the effort to complete the aging tests is included.

The effort directly attributable to the replacement of MOCA resulted in a 17 percent cost growth to the originally estimated 5 million dollar motor development program, or 855,000 dollars. A legal ruling was made that no fee would be paid as the effort was not "new scope" under the contract, but rather was effort arising from an act of the Government in its sovereign capacity. Simply stated, the United States as a contractor is not responsible for the United States as a law giver. The stretch-out of effort due to the replacement activity, the secondary effects involving the aging program, and certain other factors unrelated to MOCA resulted in an overall propulsion program cost growth of 2.5 million dollars.

Close cooperation between the Project Office, General Dynamics, Atlantic Research Corporation and the Test and Evaluation Command prevented major system impacts as the motor qualification and aging difficulties were being resolved. Without this teamwork, program stoppages would have occurred which would have substantially increased the cost and schedule impacts. It was accomplished by thorough coordination of corrective action plans and proposed testing activity, quick dissemination of test results and strict inventory control of the motor configurations delivered for system level testing.

SECTION V

CONCLUSIONS AND IMPLICATIONS

There is no doubt that OSHA will continue to have a significant impact on the defense industry. Companies such as Atlantic Research have become much more sensitive to the activities of OSHA and are now closely monitoring the investigation of materials used in their business. Further, early in the design phase of new rocket motors care is taken to avoid materials that may later become an issue with OSHA and to substitute materials for ones that are known to be a problem. Where there is potential that OSHA may ban a material considered critical to propellant processing, the company is stockpiling material for future use. For a company such as Atlantic Research which has an excellent safety record, the normal OSHA workplace regulations pose no serious problems (12).

What can the Project Manager do to avoid "MOCA"-type incidents? As with industry, increased sensitivity appears to be the only answer. Specifications should be worded to preclude the use of carcinogens. Contractors should be continuously encouraged to keep their sensitivity high and plan for the future. There is nothing the Project Manager can do about the increased cost of doing business due to the normal OSHA workplace regulations and record keeping requirements.

What are the implications for the future? OSHA is having an effect on other defense-related industries. For example, American foundries are in serious trouble as a result of noise and related health regulations promulgated by OSHA. The foundries are heavily involved in the production

of many items necessary for our national defense including: tanks, ships, rifles, shells, bombs, grenades, rocket and missile launchers, and cast armor and treads for many vehicles besides tanks (7:453). Assistant Secretary of the Army, Harold L. Brownman, contends that the environmentalists have gone too far in trying to achieve perfection; that the environmental laws have been promulgated by people with good intentions, but who don't have sufficient background in industrial operations (7:454). This view is apparently supported by many in the Congress as evidenced by the multitude of OSHA-related legislation under consideration.

The 95th Congress has before it four House bills to repeal the 1970 Occupation Safety and Health Act. It is highly unlikely that these bills will receive wide-spread support. Senator Bartlett of Oklahoma's Senate Bill S.179 would amend the 1970 Act to preclude the proposal of new standards until the financial impact had been published in the Federal Register and a determination had been made that the benefits of the standard justify the impact. In addition, employers would not be required to change equipment before the normal useful life of the equipment unless a serious violation or hazard would result from its continued use. Also, citations would not be issued if employers could show (1) that implementing the standard would not affect the safety or health of his employees, (2) that he has employed alternate procedures to protect his employees and (3) that he has furnished adequate notice to employees, tried to obtain their compliance and that the violation was attributable to such employees. The bill also authorizes consultation visits that are not inspections and which give the employer a reasonable time to eliminate violations found. There

are several House bills under consideration which would provide consultation and education to employers. An example is H.R. 4983 by Congressman Sarasin of Connecticut. Amendment of the 1970 Act to provide that employers will not be fined for an initial violation and that no penalty will be assessed when violations are corrected within a prescribed period of time are provisions of identical bills H.R. 4189 by Congressman Gradison and H.R. 3895 by Congressman Fuqua. An employer who successfully contests a citation would be rewarded a reasonable attorney's fee and other litigation costs according to H.R. 1496, proposed by Congressman Hall of Missouri.

It is apparent that Congress is attempting to correct some of the inequities in the 1970 Act and to eliminate the "head in the sand" approach characteristic of past OSHA actions. This will provide welcome relief to industry. However, the Program Managers of future defense systems will continue to face OSHA's effect on the life cycle of procuring weapon systems.

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